

ON SOME NEW DRAGONFLIES FROM AUSTRALIA AND TASMANIA [Order Odonata].

BY R. J. TILLYARD, M.A., B.Sc., F.L.S., F.E.S., LINNEAN
MACLEAY FELLOW OF THE SOCIETY IN ZOOLOGY.

(Plate xxiii., and ten Text-figures.)

During the past two or three years, some interesting new material in the Order Odonata has accumulated in my collections. Pressure of more important work has hitherto prevented me from working this up; but it seems time that this task should be undertaken at last, and the descriptions are now offered in this paper.

Two new genera are here proposed, and eight new species described, together with one new subspecies. Besides these, the female and mature male of the very rare species, *Argiolestes chrysoides* Tillyard, are described for the first time, the species having been originally described from a unique male, which subsequently proved to be somewhat immature, and not fully coloured.

The most interesting of the species dealt with in this paper are two forms from Cradle Mountain, N.W. Tasmania, taken at an altitude of about 4,000 feet, in a very cold and wet climate. Two new genera are proposed for their reception. They are undoubtedly Antarctic derivatives, linking up the fauna of Tasmania (and, incidentally, of the south-eastern highlands of Australia) with the fauna of the Andean slopes in Southern Chili. One of them, *Archipetalia auriculata*, n.g. et sp., is probably the most archaic *Æschnine* Dragonfly yet discovered, and appears to represent a type ancestral, in many of its characters, to *Austropetalia* of the Blue Mountains on the one hand, and to the three Chilian genera *Petalia*, *Phyllopetalia*, and *Hypopetalia* on the other. These five genera, forming the tribe *Petaliini*, are a very distinct group, evidently of great age, but so specialised in several

important respects, notably in the approximation of the triangle to the arculus, and in the remarkable colour-scheme of the wings, that it seems highly improbable that they ever existed in any other parts of the world. All the species are evidently closely allied, so that one is bound to postulate for them, not so very long ago in geological time, a common ancestor of a type not far removed from *Archipetalia*. The only satisfactory explanation of this problem, as it seems to me, is to be found in the Antarctic Theory, as elaborated by Hedley;* indeed, the group offers almost as fine a vindication of the theory as one could have hoped to find at the present day. Assuming that the common ancestor of the group existed on the Antarctic Continent at a time when the climate was sub-alpine, then, with the lowering of the temperature to the minimum at which Odonate life was possible, either the group would have become extinct, or it would have been saved by migration along the only paths open to it. According to Hedley, this Antarctic Continent was connected at different times with (a) Tasmania and South-Eastern Australia, (b) New Zealand, and (c) Patagonia and S. Chili, by means of long, narrow strips of land. The group must, therefore, have travelled outwards from the place of origin along these three land-connections, and its descendants must be looked for in the higher altitudes of these three regions. The three Chilian genera have been known for some time, but the number of specimens obtained is still very small. The Blue Mountain species, *Austro-petalia patricia* Tillyard, was first discovered in 1903, but it was not until nine years later that another specimen was obtained, though it was carefully searched for in the interval. In dealing with this species in a previous paper,† before the discovery of the Tasmanian form, I discussed the possibility of an Antarctic origin for the group, in the following words:—"This theory would undoubtedly be strengthened by the discovery of a Tasmanian

* "The Palæographical Relations of Antarctica," by C. Hedley, F.L.S., Proc. Linn. Soc. London, Session 124, 1911-12, pp.80-90.

† "Life-Histories and Descriptions of Australian *Æschninae*," Journ. Linn. Soc. London, Zoology, xxxiii., 1916, p.21.

species. A form that finds the climate of the Blue Mountains suitable should surely also be able to find suitable refuges in Tasmania, *if it came that way*. No such species is known at present; but, owing to the small amount of collecting of Odonata carried out there, and also to the extreme difficulty of finding these insects, we cannot be sure that one does not exist. Meanwhile, we must regard the evidence for the supposition as insufficient, however tempting and fascinating the hypothesis itself may appear."

It was, therefore, particularly gratifying that the first new species met with at Cradle Mountain should prove to be a new member of the group. Its discovery greatly strengthens the argument for the Antaretic Theory. When we add also the evidence afforded by its relationship with the other members of the group, the case becomes stronger still. For this new species is older than any other member of the group, in that it still possesses the *separated eyes* of the ancestral form, together with a very densely reticulated venation, and exceedingly large auricles. One may be fairly certain that the most specialised forms will be those that have travelled furthest from their place of origin, having become more greatly modified through undergoing a greater change in their climatic surroundings. Thus the presence of the most archaic form in Tasmania points to Tasmania as the nearest locality to the place of origin of the group; so that, on this reasoning, no other place of origin but Antaretica would be possible.

That the group is not yet known to exist in New Zealand cannot now be used against the argument. It may well be that it is represented there, and is awaiting discovery by the first collector who will search for it in the right localities. Even if this is not the case, it does not damage the argument: for, as the three connections with Antaretica did not all exist at the same time, it is quite possible that the way to New Zealand became closed off before the Odonate migration began, while the other two ways, to Tasmania and Patagonia respectively, remained open.

Turning now to the second new genus, we find a further corroboration of the views here set forth. The beautiful new genus *Synthemius*, from Cradle Mountain, combines in itself the principal characters of the Australian tribe *Synthemini* and the Chilean species *Gomphomacromia paradoxa* Br. With the facies of the latter species, it possesses the typical reticulate basilar space of the *Synthemini*; so that it would be difficult, from a study of the imago alone, to decide as to which of the two it was most closely related. Realising this, I searched assiduously for the larva, and was rewarded by finding two of the exuviae. These have the typical *divergent wing-sheaths* of the *Synthemini*, so that the closer relationship with this Australian group may be taken as proved. In this case, the greater divergence between the two extreme types, *Synthemis* and *Gomphomacromia*, is clearly correlated with their greater distance from the place of origin; for the *Synthemini* are spread far and wide over Australia and Papua, while *Gomphomacromia* ranges into Ecuador and Brazil!

The following is a list of the species dealt with in this paper:—

Suborder **ANISOPTERA.**

Family **ÆSCHNIDÆ.**

Subfamily **ÆSCHNINÆ.**

ARCHIPETALIA, n.g. (Type, *A. auriculata*, n.sp.).

1. *A. auriculata*, n.sp.

TELEPHLEBIA Selys. (Type, *T. godeffroyi* Selys).

2. *T. tryoni*, n.sp.

AUSTROÆSCHNA Selys. (Type, *A. parvistigma* Selys).

3. *A. hardyi*, n.sp.

Family **LIBELLULIDÆ.**

Subfamily **CORDULINÆ.**

SYNTHEMIOPSIS, n.g. (Type, *S. gomphomacromioides*, n.sp.).

4. *S. gomphomacromioides*, n.sp.

CORDULEPHYA Selys. (Type, *C. pygmaea* Selys).

5. *C. divergens*, n.sp.

Suborder ZYGOPTERA.

Family LESTIDÆ.

Subfamily SYNLESTINÆ.

SYNLETES Selvs. (Type, *S. weyersi* Selvs).

6. *S. weyersi* Selys.
6a. *S. weyersi nigrescens*, n.subsp.
7. *S. selysi*, n.sp.
8. *S. tropicus*, n.sp.

Family AGRIONIDÆ.

Subfamily MEGAPODAGRIONINÆ.

ARGIOLESTES Selys. (Type, *A. australis* Ramb.).

9. *A. chrysoïdes* Tillyard.

Subfamily AGRIONINÆ.

AGRION Selys et auct. (Type, *A. puella* Linn.).

10. *A. brisbanense*, n.sp.

Suborder **ANISOPTERA.**

Family ÆSCHNIDÆ.

Subfamily ÆSCHNINÆ.

Tribe **Petaliini.**

Key to the Genera of the Tribe *Petalini*.

- | | | | |
|----|---|--|-------------------------|
| 1. | { | Eyes touching for a short space..... | 1. |
| | | Eyes definitely separated..... | ARCHIPETALIA, n.g. |
| 1. | { | Triangle 2-celled, subtriangle free..... | 2. |
| | | Triangle 3-celled, subtriangle 3-celled in forewing,
2-celled in hindwing..... | HYPOPETALIA Selys. |
| 2. | { | Pterostigma short; only four spots on each wing | PETALIA Selys. |
| | | Pterostigma fairly long; more than four spots on
each wing..... | 3. |
| 3. | { | Wing-spots brown; tibiae of forelegs without spe-
cialised bristles..... | PHYLLOPETALIA Selys. |
| | | Wing-spots bright ruby-red; inner set of bristles
on tibiae of forelegs close-set and thickened...
..... | AUSTROPETALIA Tillyard. |

Genus *ARCHIPETALIA*, n.g. (Text-figs.1-3).

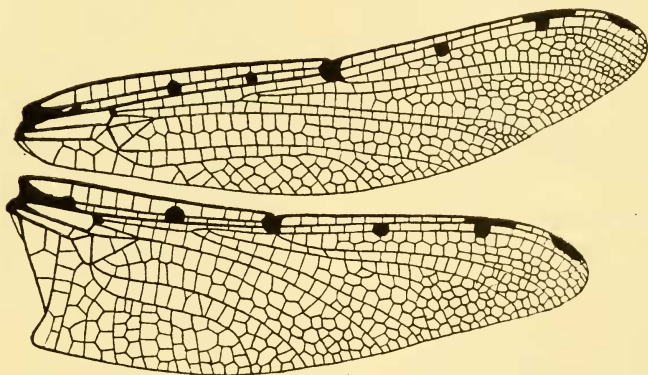
Wings rather narrow, well-pointed; venation dense; seven or eight spots of a rich dark brown colour along the anterior border of each wing. Triangles two-celled. Subtriangles free, with a single cross-vein preceding them in the submedian space. M_2 slightly waved. Rspl and Mspl weakly formed.

Head narrowed antero-posteriorly; eyes distinctly separated (Text-fig.2); the frons not abnormally raised up, but broad and well rounded.

Thorax short, hairy. Legs short and thick, the inner series of bristles on the tibiae of the forelegs thicker and more closely set than the outer.

Abdomen: seg. 2 with auricles very large in ♂, present but much smaller in ♀. Anal triangle of ♂ very large and well formed, normally 4-celled.

Genotype, *Archipetalia auriculata*, n.sp. (Tasmania).



Text-fig.1.

Wings of *Archipetalia auriculata*, n.g. et sp., ♂. (Hindwing 31.5 mm.).

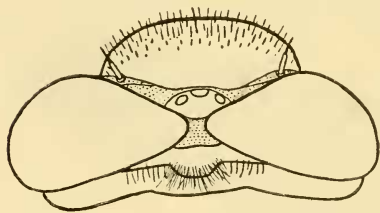
1. *ARCHIPETALIA AURICULATA*, n.sp. (Text-figs.1-3).

♂. Total length, 50; abdomen, 41; forewing, 32.5; hindwing, 31.5 mm.

Wings hyaline, very slightly tinged with pale brownish. The series of rich dark brown spots along the anterior border of all

four wings is placed as follows: a basal blotch running out to the first antenodal (in forewing, this may be divided into a small basal patch and a spot on the first antenodal in the subcostal space); a small patch upon the arculus; a semicircular spot upon an antenodal placed about half-way between base and nodus, followed, in the forewing only, by another similar but slightly smaller spot about half-way between it and nodus; a large irregular blotch upon nodus; a round spot beneath proximal end of pterostigma; between the two last, about half-way, another roundish spot; finally, an elongated blotch or cloud near apex of wing. At base of costa of all four wings is a tiny but conspicuous cream-coloured spot. *Pterostigma* 3 mm., dark brown, very narrow. *Antenodals* 13-15 in forewing, usually 10 in hindwing, the first and seventh somewhat hypertrophied.

Head: *eyes* dark brown, the orbits broadly yellow beneath.



Text-fig.2.

Head of *Archipetalia auriculata*, n.g.
et sp., ♂; ($\times 6$).

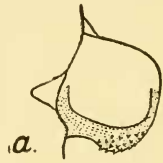
Vertex and *antennae* black; occipital tubercle large, yellow. *Frons* irregularly brownish at base, yellow above, with short black hairs; anteriorly the frons is covered by a broad dark brown band. *Anteclypeus* yellow, *postclypeus* very dark brown; *labrum* dark brown,

with two small centrally placed yellow spots; *labium* rich brown, hairy.

Thorax blackish-brown, hairy. *Prothorax* with two dorsal yellow spots. *Synthorax* with a pair of short slanting dorsal yellow stripes converging posteriad, pointed at both ends; behind these, further apart, a pair of yellow spots. Sides of thorax with well-marked lateral and sublateral bands of pale yellow; between them, a small yellow spot near wings; and another spot placed latero-ventrally close to base of abdomen. *Legs* black, except the basal half or more of the femora, which is dark brown.

Abdomen cylindrical, moderately stout, 1-2 widened, 3

scarcely pinched at all, 8-10 not enlarged. *Auricles* (Text-fig.3) very large, bright yellow above, edged with dark brown outwards and posteriorly; underside brown. *Colour* of abdomen blackish-brown: 1, with a pair of lateral yellowish-green marks; 2, with three pairs of short narrow marks of the same colour; 3-6, each with a conspicuous pair of dorsal yellowish-green stripes pointed in front, placed between base and transverse carina; posterior to this carina, a pair of small basal spots wide apart, and a similar pair of small apical spots; sides with an elongated patch of bright yellow between base and transverse carina; 7-8 similarly marked, but with the pattern modified by the approach of the transverse carina nearer to base, thus shortening the anterior stripes and lengthening the apical spots; also the lateral yellow markings extend apically beyond the carina; 9, with a pair of dorsal yellow markings, triangular, with their vertices placed basally on the segment; also a pair of lateral basal yellow spots; 10, with two large yellow spots isolating an irregularly trapezoidal basal black patch. Dorsally on 6-9 are conspicuous patches of grey hairs. Beneath the inferior appendage, seg. 10 carries a rounded tubercle with two projecting teeth, sharply pointed, black.



Text-fig.3.*

Appendages (Plate xxiii., figs.1-2): *superior* 1.2 mm., black, pointed, flattened, somewhat twisted; *inferior* 1.4 mm., trifid, the middle lobe very wide, truncated, yellow bordered with black; the lateral lobes black, cornute, divergent.

♀. *Total length*, 52; *abdomen*, 36; *forewing*, 34.5; *hindwing*, 33.5 mm. Differs from ♂ as follows:—*Wings* broader, with more rounded tips; all the wing-spots much larger; base of hindwing narrow, the posterior border sloping gradually away almost in a straight line at an angle of 45° to the wing-axis, then curving evenly round to reach the widest part of the wing just before the termination of Cu₂. *Prons* and *face* darker, the yellow on the

* Auricles of *Archipetalia auriculata*, n.g. et sp.; a, male; b, female; (× 10).

upper part of the frons much reduced. *Abdomen* very wide, 4.5 mm. at seg. 2, 3 mm. at segs. 3-8, segs. 9-10 narrower; markings duller. *Appendages* short, black, conical, convergent.

Types in Coll. Tillyard (Cradle Mt., N.W. Tasmania, Jan. 18th, 1917).

Hab.—Found only at Cradle Mountain, North-West Tasmania, at an elevation of from 3,000 to 4,000 feet. Very rare. In the course of three weeks' collecting, only eleven males and three females were taken. They fly fairly fast, very close to the ground, along the tiny brooklets which drain the swampy areas on the watersheds. They were also occasionally seen flying up the steep sides of the high hills buttressing the actual peaks of Cradle Mountain itself. The captures range from January 10th to 21st. All the specimens were very mature, some being much torn; so that this species, like its ally *Austropetalia patricia*, of the Blue Mountains, is evidently a Spring species, and probably appears on the wing late in November, or early in December.

The larva was searched for, but unsuccessfully. No doubt the heavy rains and storms of this region would soon sweep away any exuviae, so that the only chance would be to visit the mountain considerably earlier in the season.

As indicated in the Introduction to this paper, this species is undoubtedly the most archaic of the tribe so far discovered. Indications of Petalurine affinity are to be found in the very pointed wings of the male, the excessively narrow pterostigma, and the separation of the eyes; all archaic characters, and perhaps derived from a common ancestor of the *Petalurinae*, *Cordulegastrinae*, and the earliest *Eschninae*, of the last of which the tribe *Petaliini* appears to be a specialised side-branch, from near the very base of the subfamily. The lines of specialisation are the remarkable colour-pattern of the wings, the close approximation of the triangles of all four wings to the arculus, and the unique structure of the anal appendages of the male. The great size of the auricles is possibly an archaic character, and raises the question as to whether these peculiar structures may not have been derived directly from the original abdominal append-

ages of the second segment. What their function is to-day, or has been in the past, we do not yet know. But we must repeat that they are never well-developed except in those males with angulated hindwings, and are seldom at all present in the females, or in males with rounded hindwings. In *Archipetalia*, they certainly bear the same relationship, in size and position, to the hindwings that the balancers or halteres of a Dipterous insect bear to the forewings; so that there is a presumption of a similar function in both cases. Watching the effect on the flight, of careful amputation of one or both of the auricles, might solve this problem—an experiment I hope to carry out in the future.

It should be borne in mind that practically no collecting in the Spring of the year has as yet been done either upon Mount Kosciusko and the other high elevations in South-Eastern Australia, or upon similar ground in New Zealand. The possibility of the existence of a new species in the former region seems to me to be very considerable. On the Blue Mountains, *Austro-petalia patricia* appears in October, and is always completely over by the end of November; so that it would probably be necessary to visit Kosciusko as early as the end of November to be successful. The chances of discovery in New Zealand are more remote, since any species that might exist there should remain out until the end of December, at any rate; and might, therefore, be expected to have been found already, by collectors in suitable localities, at that time of the year.

Tribe **Brachytronini**.

Genus TELEPHLEBIA Selys.

2. TELEPHLEBIA TRYONI, n.sp. (Plate xxiii., figs.3-4).

♂. *Total length*, 69·5; *abdomen*, 55; *forewing*, 43; *hindwing*, 44 mm.

Wings densely reticulated, fairly broad, very rounded at tips; forewing distinctly shorter than hindwing. Venation very pale brownish, costa pale yellow. *Pterostigma* very long, 5·5 mm., pale ochreous, well braced, covering about ten small cellules. A brownish cloud at base of wings extends up to areulus, chiefly in

subcostal space, and continues more lightly on to the nodus, which is covered by a brownish cloud extending from 2 to 3 mm. distad between C, R, M_{1+2} , and Rs; a very light cloud is continued from nodus to pterostigma, chiefly between R and M_1 . Apparent prolongation of Sc beyond nodus extends for two cells' width. *Antenodals* about 27 in forewing, 23 in hindwing, nos. 4 and 8 hypertrophied. *Postnodals* about 27 in all wings.

Head: *eyes* and *vertex* brown; *frons* very prominently anvil-shaped, slightly darkened towards apex; rest of head a medium orange-brown.

Thorax dark brown, paler along the mid-dorsal carina; sides brown, tinged with olive-green; humeral stripes vestigial. *Legs* brown.

Abdomen pinched at seg. 3, and again at seg. 4; 5-9 cylindrical, 10 slightly widened distally, with a pyramidal dorsal tubercle. *Colour* brown.

Appendages: *superior* 3 mm., slender, slightly waved; *inferior* 2.5 mm., subtriangular, concave above, tip narrowed, slightly blunted. *Colour* pale straw.

♀. Unknown.

Type in Coll. Tillyard. (Brisbane, Q., T. Batchelor, Dec., 1901). A second male in my collection, taken by the same collector in Jan., 1901. Two other males from the same series are in the collection of the Queensland Agricultural Department, from whom the two males in my own collection were received in exchange.

Hab.—Brisbane, Q. The locality where they were taken is not exactly known, but is, in most probability, built over long ago; so that it is possible that this species is already extinct.

I dedicate this very rare species to Mr. Henry Tryon, F.E.S., Government Entomologist of Queensland, to whom I am indebted for the opportunity of studying it.

This new species closely resembles *T. godeffroyi* Selys, in general appearance; but may be distinguished from it at once by the much longer pterostigma and the great difference in the form of the anal appendages.

Genus *AUSTROÆSCHNA* Selys.3. *AUSTROÆSCHNA* *HARDYI*, n.sp. (Plate xxiii., figs. 5 6).

♂. *Total length*, 64; *abdomen*, 48; *forewing*, 41; *hindwing*, 40 mm.

Wings hyaline, with dense venation. *Antenodals* about 20 in forewing, about 14 in hindwing; the first and fourth hypertrophied. *Postnodals* 20-23 in all wings. *Triangles* three-celled in all four wings. *Anal triangle* large, right-angled, three-celled; *membrannule* 3 mm. in hindwing, whitish. *Pterostigma* in forewing 2.6, in hindwing 2.8 mm., greyish-brown enclosed by black veins.

Head: *eyes* grey-brown; *vertex* black; occipital tubercle small, brownish; *frons* black above, with two conspicuous creamy-white spots; anterior part of frons dark brown, sides creamy-white; *anteclypeus* creamy-white touched with grey, and with two ill-defined squarish brown marks just above postclypeus; *postclypeus* dark brown; *labrum* dark brown, with two contiguous yellow spots at base; *mandibles* with a yellow spot; *labium* dark brown.

Thorax shiny dark brown mottled with pale grey above, and with a large number of irregular creamy-white spots and patches on sides; *notum* mostly greyish. *Legs* large and strong, black, except the basal portion of femora, which is bright brown.

Abdomen: 1-2 swollen, 3 very pinched, 4-10 gradually widening, 10 very wide; 1-2 very hairy at sides. *Colour* black, with numerous pale greyish markings of very irregular shape; 2, with the auricles greyish bordered with black, and the segmental pattern so arranged as to isolate a black X surmounting a thicker V; 3, with two pairs of small spots arranged dorsally about the transverse carina, and a pair of larger apical spots; 4-7, on the basal half of each segment four pale blotches isolate a black cross; rest of segment black except for two large apical spots; 8, mostly black; 9-10, with pale markings apically. Seg. 10 well rounded and convex above, *without a dorsal tubercle*.

Appendages: *superior* 3.6 mm., black, very wide apart, sublanceolate, shortly stalked, tips very blunt; each appendage

carries a large spine or tooth beneath its basal half; *inferior* 1.8 mm., very wide and truncated at tip, much upcurved, brown bordered with black. (Plate xxiii., figs.5-6).

♀. *Total length*, 60; *abdomen*, 44; *forewing*, 41; *hindwing*, 39.5 mm. Very similar to ♂, but colours somewhat duller. *Abdomen* with 1-2 very swollen, 3 not pinched, 8-9 only slightly widened, 10 narrower. *Dentigerous plate* of seg. 10 with nine or ten closely set teeth. *Appendages* 1.4 mm., short, lanceolate, rather thick, black.

In the above descriptions, the colouration is probably that of individuals not fully matured.

Types in Coll. Tillyard (Cradle Mt., N.W. Tasmania, Jan. 16th, 1917).

Hab.—Cradle Mountain and Middlesex Plains districts, N.W. Tasmania, altitude 2,500-4,000 feet. At the beginning of January, the insect was very immaturesly coloured, and immature specimens were met with right through the visit. The insect is a large one, and flies only in sunshine, and chiefly in the afternoons. As rain usually sets in between 2 and 3 p.m., the task of obtaining sufficient food is not an easy one. We did not meet with a single well-nourished specimen, even those that had apparently been out longest being somewhat flabby and evidently not fully coloured.

This insect loves most of all to lurk in the patches of thick forest-country, and, like most of the duller-coloured members of the genus, it is usually to be seen resting on tree-trunks, where its dull grey-brown colouration renders it quite inconspicuous.

This species is very closely related to *A. tasmanica* Tillyard, from Hobart, to which it bears much the same relationship that *A. multipunctata* Martin, does to *A. parristigma* Selys. The male may be at once distinguished by lacking the immense dorsal tubercle on seg. 10, and by the inferior appendage not being deeply bifid, as in *A. tasmanica*, but merely truncated. Also the superior appendages in *A. tasmanica* are somewhat longer and narrower, and less blunt at the tip, than in the new species. The female of *A. tasmanica* is not known

Family LIBELLULIDÆ.

Subfamily CORDULIINÆ.

Tribe **Synthemini.**

Genus **SYNTHEMIOPSIS**, n.g. (Text figs. 4-5).

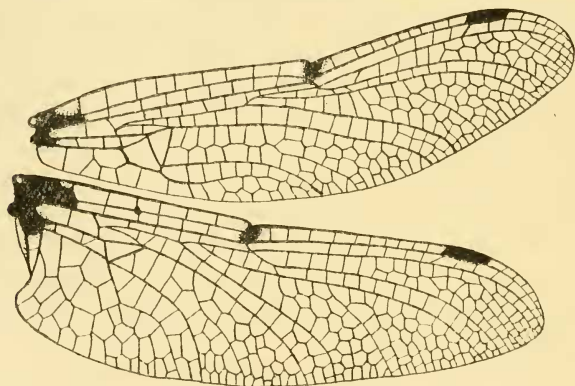
Characters intermediate between those of the Australian genus *Synthemis* and the Chilean genus *Gomphomacromia* (*G. paradoxa* Br.). Wings with the venation more open than usual in the former, but denser than in the latter. Median space with one cross-vein in all four wings; submedian with three cross-veins in forewing, two in hindwing. In forewing, the triangle is somewhat broader than in *Synthemis*, its basal side being placed at a level about half-way along the hypertrigonal space, as in *Gomphomacromia*; the subtriangle is broad, with its posterior side bent; the triangle is followed by two rows of post-trigonal cells; M_4 and Cu_1 diverge widely towards the wing-margin. Excess bridge-crossveins present in both wings. In hindwing, the triangle is longer and much more recessed towards arculus than in *Synthemis*, the basal side of the triangle being placed at a level less than 1 mm. distad from arculus; the subtriangle is still quadrangular and small. Anal loop of hindwing short, with about five large cells in male, more in female. Anal triangle of male 2-celled, very narrow, the anal angle very prominent; the membranule large. In all four wings, pterostigma weakly braced; R_{s+1} and M_{s+1} not definitely formed. Wings blotched with black at base and upon nodus.

General facies of the insect resembles that of *Gomphomacromia paradoxa* Br. Frons prominent and more squarely cut than in *Synthemis*. Ovipositor of female with valves absent; the anterior processes fused basally (as in *Gomphomacromia*), somewhat knobbed distally; median processes small, each carrying, projecting from its base, a large tuft of long stiff bristles. (Text fig. 5).

Larva resembling that of *Synthemis*, but of slenderer build; wing-sheaths divergent; body hairy; teeth of the lateral lobes of the labial mask fairly large.

Genotype, *Synthemiosis gomphomacromioides*, n.sp.

The presence of a cross-vein in the median space places this insect definitely within the tribe *Synthemini*, as does also the larval character of the possession of divergent wing-sheaths, and the general form of the larva, which closely resembles that of *Synthemis eustalacta* Burm. But, in many other respects, as clearly shown in the generic definition, the insect is more closely allied to *Gomphomacromia*. It does, in fact, very neatly bridge the gulf between the two tribes *Synthemini* and *Idocorduliini*, thus suggesting the possibility of the origin of both these tribes from an ancestor not far removed in structure from the present genus. One might also be led to infer from this that the whole subfamily *Corduliinae* was originally either of Australian or Antarctic origin, an origin which would accord very well with its present remarkable distribution.



Text-fig. 4.

Wings of *Synthemius gomphomacromioides*, n.g. et sp., ♂.
(Hindwing, 25 mm.).

4. *SYNTHEMIOPSIS GOMPHOMACROMIODES*, n.sp.

(Plate xxiii., figs. 7-8; Text-figs. 4-5).

Total length, 41; *abdomen*, 30; *forewing*, 26; *hindwing*, 25 mm.

Wings mostly hyaline, venation black; base of costa of all four wings with a conspicuous cream-coloured spot. Bases of wings heavily marked with an irregular black patch, extending

2-3 mm. into subcostal space, very little into median space, but further again into submedian space and down into anal triangle of hindwing. *Nodus* with a black patch. Usually a very small spot of black on *Sc* in hindwing, about half-way between base and *nodus*. *Antenodals* 7-9 in forewing, usually 6 in hindwing, all complete, but the corresponding parts in costal and subcostal spaces not always coterminous. *Postnodals* usually 7 in forewing, 7-9 in hindwing, first three incomplete. *Pterostigma* 1.8 in forewing, 2 mm. in hindwing, black.

Head: *eyes* just touching, dark brown, orbits pale yellow beneath. *Vertex* black; occipital tubercle blackish above, yellow posteriorly, hairy. *Frons* black, with two large pale yellow spots above, separated by the median depression; these spots extend over on to the anterior part of the frons, the rest of which is dark metallic purplish. *Clypeus* and *labrum* blackish, touched with brown in the middle; *labium* black.

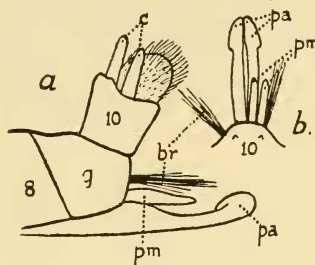
Thorax black, with very long greyish hairs dorsally; a pair of conspicuous pale yellow antehumeral spots placed well forward. On each side is a large crescentic marking, also a large oval spot close to base of abdomen, both cream-coloured. *Notum* black, scuta yellowish. *Legs* black, except trochanters, which are brown basally and cream-coloured apically; tibial keel narrow but long, half as long as tibiae on forelegs, longer still on the others.

Abdomen: 1-2 widened, 3 narrowed, rest narrowly corduliform, as in *Synthemis*. *Colour* black, marked with lemon-yellow as follows:—2, a pair of small dorsal spots and yellow on auricles; 3-7, a pair of rounded dorsal spots placed nearer to base than to apex; 8, two very large confluent spots, occupying almost the whole of the basal three-fifths of the segment; 9, two medium basal spots, well-rounded, close together. On either side of 3-8, a basal lateral spot.

Appendages: *superior* 1.8 mm., black, curved near bases, tips well-pointed; each carries a sharp tooth or spine beneath; *inferior* 1.2 mm., wide, upcurved, tip truncated; dark brown. (Plate xxiii., figs. 7-8).

♀. *Total length*, 43; *abdomen*, 31; *forewing*, 38·5; *hindwing*, 37·5 mm. Very similar to ♂, but differing as follows:—

Wings broader, anal loop of hindwing larger, with 7 or more cells: pterostigma of hindwing 2·5 mm. Black markings on



Text-fig. 5. *

in Text-fig. 5.† *Ovipositor* as described in generic definition, black. *Appendages* 0·5 mm., straight, black. (Text-fig. 5).

Types in Coll. Tillyard (Cradle Mt., N.W. Tasmania, taken *in cop.*, January 18th, 1917).

Hab.—Small swamps on the watersheds around Cradle Mountain, altitude 4,000 feet.‡ Only seen in two localities, from which about forty specimens were taken; of these, all but six were males. Mr. G. H. Hardy, of the Tasmanian Museum, also captured a single male at Flowerdale Creek, near Wynyard, Tas., in January, 1916. This male is slightly larger and more heavily marked than the Cradle Mountain series.

The insect flies fairly rapidly over the swamps, frequently settling on the reed-stems. Owing to its rich black and lemon-

* End of abdomen of *Synthemiopsis gomphomacromioides*, n.g. et sp. ♀: *a*, lateral view; *b*, dorsal view; ($\times 10$): *br*, bristles; *c*, anal appendages; *pa*, anterior processes of ovipositor; *pm*, median processes of ovipositor; 8-10, abdominal segments.

† In some other females captured, the position of segs. 9-10 was not quite so abnormal.

‡ The first specimen of this insect taken was captured at Cradle Mountain by Professor T. T. Flynn, of Hobart, in December, 1915. When it came into my possession in June, 1916, it was badly crushed. It was this discovery that led me to visit the locality.

yellow colouring, it much resembles a small *Synthemis regina* Selys. Along the small rivulets close by, the very similar dragon-fly, *Synthemis tasmanica* Tillyard, was on the wing much more abundantly. This latter species also frequently intruded upon the domain of *Synthemioptis*, and sometimes the latter would make short excursions along the rivulets. *S. tasmanica* was, however, easily distinguished by its duller colouration, which is dark brown, with ochreous-yellow markings.

A search was made for the larva of this species. Seeing a newly-emerged specimen fly off from the side of a small rivulet close to the swamp, a search amongst the reed-stems resulted in the discovery of a fresh larval skin; the next day, another imago was found transforming, and the exuviae secured. For comparison, the exuviae of *Synthemis tasmanica* were secured. These latter closely resemble those of *S. enstalacta* Burm. The exuviae of *Synthemioptis* are closely similar to those of *S. tasmanica*, but may be at once distinguished by their more slender build, more prominent eyes, and more projecting frontal shelf. The wing-sheaths are divergent, and the whole body hairy, as in all larvae of *Synthemini*; while the teeth of the lateral lobes of the labium are of about the same size and number as in *S. enstalacta*. The whole larva strongly resembles that of *Cordulegaster*, though of course considerably smaller.

Tribe **Cordulephyini.**

Genus **CORDULEPHYA** Selys.

5. **CORDULEPHYA DIVERGENS**, n.sp.

(Plate xxiii., figs.9-10; Text-fig.6).

♂. *Total length*, 31·5; *abdomen*, 27·5; *forewing*, 24·5; *hindwing*, 23 mm.

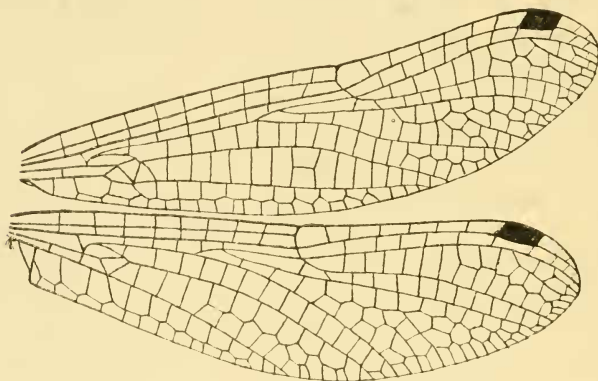
Closely related to *C. pygmaea* Selys, from which it differs as follows:—

Wings: *antenodals* 9-10 in forewing, 8 in hindwing. *Post-nodals* 6-7 in both wings. *Pterostigma* short, thick, black, 1·4 in forewing, 1·7 mm. in hindwing.

General body-colouration duller; frons and face with scarcely any metallic purplish colouring.

Abdomen very slender, cylindrical. Segs. 1-2, ochreous, with a touch of black apically; 3-7, with the basal half ochreous, the apical half black; 8, black, with ochreous base; 9-10, black.

Appendages very different from those of *C. pygmaea*. *Superior* 1.2 mm., black, diverging, tips clubbed: each appendage carries a small inferior tooth about half-way; *inferior* 0.8 mm., subtriangular, dark brown, tip upcurved and fairly pointed. (Plate xxiii., figs. 9-10).



Text-fig. 6.

Wings of *Cordulephya divergens*, n.sp., ♂. (Hindwing 23 mm.).

♀. *Total length*, 31.5; *abdomen*, 26.5; *forewing*, 27; *hindwing*, 26 mm. Closely resembles the male. *Pterostigma* very thick in forewing. *Abdomen* slender (much slenderer than in ♀ of *C. pygmaea*), cylindrical, the ochreous markings more definite than in ♂. *Valvula vulvæ* almost obsolete. *Appendages* 0.4 mm., black, bluntly pointed.

Types, ♂♀, in Coll. Tillyard. (Hornsby, N.S.W., taken *in cop.*, resting upon a tree-trunk, May 8th, 1916).

Hab.—Upper end of Old Man's Valley, Hornsby. Eight males and two females were taken during May, 1916. The species was looked for again in 1917, but without success. The much commoner *C. pygmaea* Selys, occurs with it, but is nearly

over by the time this species comes out. It is the latest dragonfly to emerge in the season, as far as I know; and, to this fact, may be attributed its non-discovery before last year, since it is seldom that one goes looking for Odonata so late in the year.

This species, like the others of the genus, is very fond of settling on tree-trunks in the sunshine. Unlike *C. pygmaea*, it does not *quite* close its wings over its back, but usually holds them apart at an angle of 10° or so. Owing to its slender body, it looks exactly like a Zygopterid Dragonfly. This led to its discovery; for I netted it because I thought it was a new Zygopterid, whereas if I had thought it was *C. pygmaea*, I should probably have left it alone.

Three species of the interesting genus *Cordulephya* are now known and may be separated as follows:—

- | | | | |
|----|---|--|-----------------------------|
| 1. | { | Bright yellow and black colouration; superior appendages of ♂ not divergent | 1. |
| | | Duller ochreous and black colouration; superior appendages of ♂ distinctly divergent | <i>C. divergens</i> , n.sp. |
| | | Small species; superior appendages of ♂ straight | <i>C. pygmaea</i> Selys. |
| | { | Larger species; superior appendages of ♂ convergent | <i>C. montana</i> Tillyard. |

Suborder **ZYGOPTERA.**

Family **LESTIDÆ.**

Subfamily **SYNLESTINÆ.**

Genus **SYNLESTES** Selys.

Amongst the numerous specimens in my collection, from many localities, which belong to the genus *Synlestes*, I find a very great diversity in size, structure, and colouration. Only two species have so far been described, viz., *S. weyersi* Selys, and *S. albicauda* Tillyard. The latter is a very distinct species, which can be recognised at once, without the slightest difficulty. The former is, however, somewhat of a puzzle, so that it would be advisable, at the very start, to state the difficulties surrounding it, and to attempt a solution of them.

Unfortunately, de Selys originally described *S. weyersi* from a broken female only. This specimen was labelled "Port Denison,

Queensland," and was described in 1868. In 1886, de Selys added, under the same name, the descriptions of two complete males, one from Sydney and another from Queensland. Now the large, common species, so conspicuous for its brilliant metallic green colouring, which at present passes in all collections as *S. weyersi*, is found very abundantly in many localities in Victoria and New South Wales, but never, so far as I know, in Queensland. In the latter State, two smaller, much rarer, and much less conspicuous species occur, which closely resemble the Southern form in general colouring, but can at once be distinguished from it on good morphological grounds. Further, one of these species extends southwards down the coastline, and can be taken in the Sydney district, though much more rarely than the commoner and larger species.

We have, therefore, three possibilities :—

(1) The three specimens described by de Selys may all belong to one species, and the locality-labels may all be correct. In that case, one would naturally expect that species to be the one that occurs in Queensland and also extends down the coastline to Sydney.

(2) The three specimens may all belong to one species, but the locality-labels may not all be correct. (Wrong locality-labels are not unknown in the case of specimens sent from Australia in early days, *e.g.*, the tropical *Hydrobasileus brevistylus* was sent home labelled both "Melbourne" and "Sydney," though it does not occur within hundreds of miles of either locality). Under such a supposition, one would admit the probability of the three specimens belonging to the common large Southern species.

(3) The three specimens may not all belong to the same species, even though de Selys considered them to be so.

As the original type-female, in the de Selys Collection at Brussels, cannot now be studied, we have to fall back upon de Selys' description, and try to find in it evidence as to which form is really the original *S. weyersi* of de Selys. There are three points in this description which seem to me to point definitely to the fact that de Selys' original female belonged to the common

Southern form, in spite of its Queensland label. These are (*a*) the colour of the prothorax, metallic green with the margins and the rounded posterior lobe yellow, (*b*) the colour of the pterostigma, yellowish, surrounded by thick black veins, and (*c*) the yellow colour of the "deuxième article" of the antennæ (the actual joint that is yellow is the scape, but de Selys' measurements show that he mistook the scape for the second joint, or pedicel, owing to the swollen base of insertion appearing like a true joint). All these three characters are distinctive of the common Southern form. On the other hand, all the specimens that I have seen from Queensland have the prothorax almost entirely yellow, the pterostigma black, and the scape of the antennæ also black.

The two males described by de Selys in 1886 clearly belong to the common Southern form, as both the measurements and the description of the appendages testify.

Thus we have to conclude that possibility (2) above is the correct solution of this difficult problem. The key to the species here given, and the naming of the new species described here, are both based on that supposition being correct.

Key to the Species of the Genus *Synlestes*.

- | | | | |
|----|---|--|----------------------------|
| 1. | { | ♂ with superior appendages strongly forcipate, blackish; | |
| | | ♀ with seg. 10 and appendages dark (either metallic green or black) | 1. |
| 1. | { | ♂ with superior appendages elongated, creamy-white; ♀ | |
| | | with seg. 10 and appendages creamy-white. <i>S. albicauda</i> Tillyard. | |
| 1. | { | Very slender forms (hindwing about 27 mm.), with very narrow wings and short black pterostigma | 2. |
| | | Larger species (hindwing about 32 mm.), not so slender, with more densely-veined wings and longer yellowish or brownish pterostigma | 3. |
| 2. | { | Superior appendages of ♂ with a prominent inner tooth at about one-fourth of the length from the apex; abdomen 0.6 mm. wide in middle; greatest width of forewing 4.5 mm | <i>S. selysi</i> , n.sp. |
| | | Superior appendages of ♂ without a prominent inner tooth towards apex; abdomen only 0.4 mm. wide in middle; greatest width of forewing only 4 mm. | <i>S. tropicus</i> , n.sp. |

posterior border. *Synthorax* with a pale yellow lateral stripe on each side of mesothorax, close to suture, which carries a black band: sides of metathorax pale yellow. *Legs* black, except coxae and trochanters, which are pale yellow.

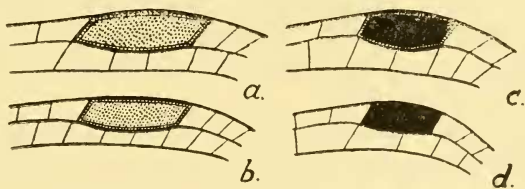
Abdomen blackish, sides of 1-2 pale yellow; 3-6 with a pair of small basal lateral yellow spots.

Appendages closely similar to those of type-form. *Superior appendages* of male with a large inner tooth close to base, two small teeth on inner border at about half-way, followed by very fine denticulation of the inner border for a short distance; tips well rounded.

Types, ♂♀, in Coll. Tillyard (Lily Vale, Feb. 11th, 1911).

Hab.—Heathcote, Waterfall, and Lily Vale, Illawarra Line, New South Wales. December to March. Not uncommon.

This subspecies is at once strikingly distinguished from the type-form by its dull colouration; but it does not differ from it morphologically sufficiently to warrant its elevation to full specific rank.



Text-fig. 8.

Pterostigma of *a*, *Synlestes weyersi weyersi* Selys, ♂; *b*, *S. weyersi nigrescens*, n. subsp., ♂; *c*, *S. selysi*, n. sp., ♂; *d*, *S. tropicus*, n. sp., ♂; ($\times 6$).

7. *SYNLESTES SELYSI*, n. sp. (Plate xxiii., fig. 12; Text-figs. 7-8).

♂. *Total length*, 58.5; *abdomen*, 48.5; *forewing*, 28; *hindwing*, 27 mm.

Wings with 15-16 postnodals; *pterostigma* 1.5 mm. in forewing, black, covering only two cells (Text-fig. 8c). Greatest width of forewing, 4.5 mm.

Head: *eyes* dark green; *vertex*, *frons*, *clypeus*, and *labrum* brilliant metallic green; *genae* and *labium* pale yellow; *antennae*

black, the basal joint very short, only about one-fifth as long as the very long and thin second joint.

Thorax: *prothorax* dull yellow edged with dark brown; posterior border edged with lemon-yellow. *Synthorax* brilliant metallic green above, also on sides of mesothorax; a pair of pale yellow humeral rays present; sides of metathorax lemon-yellow, with a rectangular patch of metallic green running forward for 2.5 mm. beneath hindwing. *Notum* dark green, with pale yellow spots on scuta. *Legs* with the coxæ, trochanters, and bases of femora in fore and middle legs pale yellow; the rest of the femora, the tibiæ of forelegs, and all the tarsi black; tibiæ of middle legs mostly brownish; hindlegs all black, except the dark brown tibiæ.

Abdomen very slender, 1-2 and 8-10 slightly widened; width at segs. 5-6 only 0.6 mm. **Colour** metallic green, pale yellow on sides, especially on 1-2.

Appendages: *superior* 1.4 mm., black, forcipate, shaped as shown in Plate xxiii., fig. 12; each appendage carries a large inner basal tooth, a second tooth ventrally placed at about half-way (not visible in figure), and a third large tooth on inner margin, at about one-fourth of the way from the tip. (Contrast the same appendages in *S. weyersi*, Plate xxiii., fig. 11). *Inferior* very short, blunt, rounded.

♀. *Total length*, 51.5; *abdomen*, 40; *forewing*, 31.5; *hindwing*, 30 mm. Closely resembles the male, from which it differs only in the shorter and thicker abdomen, and the longer and slightly wider wings, with slightly larger pterostigma. Segs 8-9 of abdomen much swollen, 10 very small and narrow; *appendages* 0.3 mm., pointed.

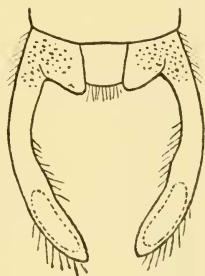
Differs from *S. weyersi* Selys, by its much slenderer build, smaller size, narrower wings, with M_2 leaving M_1 nearly half-way between nodus and pterostigma, the latter structure being black, and much shorter than in *S. weyersi*; antennæ without any yellow on the basal joint, which also is smaller than in *S. weyersi*; superior appendages of male differently shaped from those of *S. weyersi*.

Types in Coll. Tillyard (Hornsby, March 31st, 1917).

Hab.—Hornsby and Ourimbah, N.S.W.; Mount Tambourine, S. Queensland; rare. February to April. Probably it would be found all up the Eastern Coast, if searched for. Its late appearance in the season is in marked contrast with the habit of *S. weyersi*, which can be found at the end of October, and seldom lasts until the end of January. Thus, even if the two species were to be found in the same locality, there would be practically no chance of their intercrossing.

S. SYNLESTES TROPICUS, n.sp. (Text-figs. 8*d*, 9).

This species differs from *S. selysi* in its excessively slender build, its very narrow wings, very short black pterostigma (Text-fig. 8*d*), and in the different form of the superior appendages, which are slenderer, and lack the large inner tooth on the apical half (Text-fig. 9). *Abdomen* 51 mm. long, width at segs. 5-6 only 0.4 mm. *Forewing* 29 mm. long, greatest width only 4 mm. *Pterostigma* of forewing 1 mm. long, covering only a little more than one cellule; jet black. ♀. Not known.



Text-fig. 9.*

Type, ♂, in Coll. Tillyard (Kuranda, F. P. Dodd; December 20th, 1912).

Hab.—Kuranda and Herberton, North Queensland. Only two males known, the second taken by Mr. F. P. Dodd, at Herberton, on October 22nd, 1910; not so mature as the type.

Family AGRIONIDÆ.

Subfamily MEGAPODAGRIONINÆ.

Genus ARGIOLESTES, Selys.

9. ARGIOLESTES CHRYSOIDES Tillyard. (Text-fig. 10, *a*, *c*).

This species was originally described by me from a single male taken by Dr. A. J. Turner, at Montville, Blackall Ranges, Queensland. In October, 1915, I visited the Blackall Ranges, staying at Maleny, some twelve miles south of Montville. The district

* Appendages of *Synlestes tropicus*, n.sp., ♂; (× 14). Compare Plate xxiii., figs. 11, 12.

is highly cultivated, and very little of the rich scrub is now left. The lovely *Argiolestes chrysoïdes* was found in only one locality, where a patch of scrub, about one square mile in area, had been left by an owner desirous of obtaining a higher price for it in the future. Through this scrub, a beautiful little stream meandered. *A. chrysoïdes* was practically confined to the small glade formed by the approach of the track through the scrub to this stream on either side—the only place in the scrub where there was any clear sunlight. By working this glade every day, I obtained, in the course of about a fortnight, nearly twenty males and ten females of this rare species. I am now able to offer a description of the female, which differs very markedly from the male in its colour-pattern:—

Total length, 41; *abdomen*, 32; *forewing*, 30; *hindwing*, 29 mm.

Wings much longer than in male; *postnodals* 22-23 in forewing, 20-21 in hindwing; *pterostigma* black, 1·3 mm. in forewing.

Colour-pattern very different from that of male, and more resembling that of the female of *A. amabilis* Foerster. When mature, the groundcolour is velvety-black, with deep purplish reflections on the abdomen; the markings are a rich red, the pattern being that shown in Text-fig. 10c; all the rest of the abdomen not shown in this figure is black.

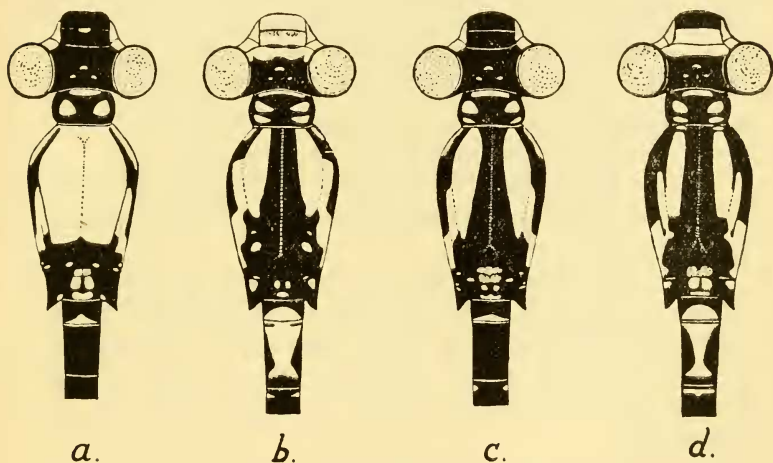
For comparison, I have figured also the colour-pattern of the male (Text-fig. 10a), and those of the male and female of *A. amabilis* (10b and 10d respectively). It will at once be seen that the sexes differ much more markedly in *A. chrysoïdes* than they do in *A. amabilis*.

Types in Coll. Tillyard (♂ taken by Dr. A. J. Turner, at Montville, October 6th, 1912; ♀ taken by myself at Maleny, October 12th, 1915).

Hab.—Blackall Ranges, Queensland. October. Very rare.

The changes in colouration in this species from emergence to maturity are very remarkable. At emergence, all the parts destined ultimately to become red are pure white in the male, while, in the female, they are white with slight blackish cloudiness encroaching from the black groundcolour on to the sides of the

white area. This white colour deepens very slowly, becoming first of all cream-coloured, then lemon-yellow, then a rich golden (the stage at which the type-male was described), and finally a rich orange-red in the male. The female darkens further to a deep red. These changes take about six days to accomplish. In *A. amabilis*, the parts destined to become red are at first a dirty white, soon becoming straw-colour, then ochreous, then dull orange, and finally brick-red in both sexes. The changes in this species are accomplished in three days or less, as I observed on Mount Tambourine in October, 1915, a week after my visit to Maleny.



Text-fig. 10.

Colour-scheme of head, thorax, and first three abdominal segments in *Argiolestes chrysoides* Tillyard; (*a*, male; *c*, female); and in *A. amabilis* Förster; (*b*, male; *d*, female). The black represents black or deep metallic purple, the white either red or orange-red, in the mature insect.

Subfamily AGRIONINÆ.

Genus AGRION Selys et auct.

10. AGRION BRISBANENSE, n.sp. (Plate xxiii., figs. 13-14).

♂ (unique). Total length, 31·5; abdomen, 25; forewing, 18·5; hindwing, 17·5 mm.

Head very hairy. Eyes bluish-grey; *epicranium* black, with large blue postocular spots; *frons* pale blue; *postclypeus* black; *anteclypeus* and *labrum* blue; *labium* pale yellowish-brown.

Thorax hairy. *Prothorax* black, sides and posterior rim brownish. *Synthorax* black above, with a pair of straight, moderately broad, bluish-green, antehumeral bands; sides pale bluish-green, shading to whitish below, with black markings in sutures. Legs short, dull black above, pale brown beneath.

Abdomen slender, cylindrical, 1-2 and 8-10 slightly enlarged. Colour: 1, black, with two round brownish lateral spots; 2, basal half blue, rest black, with a clepsydrate brown dorsal mark; 3-5, blue, except apical fifth, which is black; 6, all black; 7, basal fourth and apical fifth black, rest blue; 8, basal two-thirds blue, apical third black; 9, basally blue, the apical suture and two large lateral blotches, occupying about half the segment, black; 10, black, with a large blue dorsal patch.

Appendages shaped as shown in Plate xxiii., figs. 13-14; *superiors* 0.3 mm., *inferiors* very minute; colour black, with pale brownish hairs.

Type, ♂, in Coll. Tillyard. (Brisbane, a unique specimen, taken by myself on Kedron Brook, January 22nd, 1913).

Hab.—Brisbane, Q. It flies in company with *Pseudagrion australasiae*, which it resembles closely in colour, though not quite so brilliant; the differences in shape and length of abdomen are considerable.

Two species are now known from Australia (viz., *Agrion lyelli* Tillyard, from Tasmania and Victoria, and *A. brisbanense*, n.sp.), which appear to me to belong to the Palearctic genus *Agrion*, with which they agree in their venation, general facies, and colouration. The only difference seems to be the form of the appendages, which are intermediate between the bifid type found in European species of *Agrion*, and the simpler form exhibited in the Australian genus *Austroagrion*. I cannot at present see my way to placing these two Australian species in a new genus; so that, as they stand, they present somewhat of an anomaly in zoogeographical distribution for this well-known genus.

Agrion brisbanense differs from its near ally, *A. lyelli*, by its larger size, greater hairiness of head and thorax, broader and more regular blue antehumeral bands on thorax, slightly less blue abdomen, and somewhat differently shaped appendages.

EXPLANATION OF PLATE XXIII.

- Fig.1.—*Archipetalia auriculata*, n.g. et sp., ♂, appendages, dorsal view; ($\times 11$).
- Fig.2.—*Archipetalia auriculata*, n.g. et sp., ♂, appendages, lateral view; ($\times 11$).
- Fig.3.—*Telephlebia tryoni*, n.sp., ♂, appendages, dorsal view; ($\times 7$).
- Fig.4.—*Telephlebia tryoni*, n.sp., ♂, appendages, lateral view; ($\times 7$).
- Fig.5.—*Austroeschna hardyi*, n.sp., ♂, appendages, dorsal view; ($\times 7$).
- Fig.6.—*Austroeschna hardyi*, n.sp., ♂, appendages, lateral view; ($\times 7$).
- Fig.7.—*Synthemiopsis gomphomacromioides*, n.g. et sp., ♂, appendages, dorsal view; ($\times 11$).
- Fig.8.—*Synthemiopsis gomphomacromioides*, n.g. et sp., ♂, appendages, lateral view; ($\times 11$).
- Fig.9.—*Cordulephya divergens*, n.sp., ♂, appendages, dorsal view; ($\times 11$).
- Fig.10.—*Cordulephya divergens*, n.sp., ♂, appendages, lateral view; ($\times 11$).
- Fig.11.—*Synlestes weyersi weyersi* Selys, ♂, appendages, dorsal view; ($\times 14$).
- Fig.12.—*Synlestes selysi*, n.sp., ♂, appendages, dorsal view; ($\times 14$).
- Fig.13.—*Agrion brisbanense*, n.sp., ♂, appendages, dorsal view; ($\times 34$).
- Fig.14.—*Agrion brisbanense*, n.sp., ♂, appendages, lateral view; ($\times 34$).